

UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

Geochemical Abundance and Distribution of Nine Metals in
Rocks and Soils of the Coeur d'Alene District,
Shoshone County, Idaho

By

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69-107

1969

The analytical data have been treated in the following manner: the data were keypunched and transferred to magnetic tape and data sets were selectively retrieved from the tape. Latitude, longitude, and content of Hg, Cu, Pb, Zn, Ag, As, Sb, Te, and Cd for each of 5563 samples were keypunched directly from analytical report forms. All data were arranged in the standard USGS Rock Analysis Storage System (RASS) format. Data were then transferred to magnetic tape, and the following 31 data sets were selectively retrieved and placed into standard USGS STATPAC format. STATPAC format allows data to be statistically manipulated by any of several standard statistical programs in residence in the computer.

- | | |
|---|---|
| 1. Outcrop, Monzonite | 16. Outcrop or float, Monzonite |
| 2. " Wallace Fm. | 17. " " " Wallace |
| 3. " St. Regis | 18. " " " St. Regis |
| 4. " Revett | 19. " " " Revett |
| 5. " Burke | 20. " " " Burke |
| 6. " Prichard | 21. " " " Prichard |
| 7. " (Belt) | 22. " " " (Belt) |
| 8. All Outcrop considered
collectively | 23. All Outcrop or float
considered collectively |
| 9. Float, Monzonite | 24. Soil, Monzonite |
| 10. " Wallace | 25. " Wallace |
| 11. " St. Regis | 26. " St. Regis |
| 12. " Revett | 27. " Revett |
| 13. " Burke | 28. " Burke |
| 14. " Prichard | 29. " Prichard |
| 15. All Float considered
collectively | 30. " (Belt) |
| | 31. All Soils considered
collectively |

All concentration data for each data set were grouped into logarithmic class intervals. Histograms and "greater than" cumulative frequency distributions were compiled for all elements in each data set. Because of deviations from normality and truncations in the distributions, the 50th, 75th, and 90th percentiles were selected as irrefutable descriptive parameters. These values were interpolated from the cumulative frequency distributions, and are shown in table 1. All values greater than the lower analytical cutoff and less than the upper analytical cutoff are considered "valid observations."

Simple linear correlation coefficients were computed for logarithms of values in each of the soil sample data sets. These coefficients are listed in matrices in table 2. The upper right hand part of each matrix contains the correlation coefficients, and the lower left hand part of each matrix contains the number of pairs of valid observations used to compute each of the coefficients. All coefficients are multiplied by 100 in order to eliminate decimals.

A grid composed of 1000-foot squares were superimposed over the entire district. For each element, all samples falling within each grid square were averaged, and the average was plotted at the center of the square. Arbitrarily, the leftmost digit of each number lies at the center of its appropriate grid square. The data were plotted in scribecoat on a Carber 600 series plotter at a scale of 1:62,500. The data plotted on each map were multiplied by an appropriate factor in order to eliminate decimals. The values on each map are equal to the elemental content in parts per million multiplied by the factor stated on the map. The mylar scribecoat was edited and photographically superimposed on a screened mylar geologic map.

Reference cited

Hobbs, S. Warren, Griggs, Alan B., Wallace, Robert E., and Campbell, Arthur B., 1965, Geology of the Coeur d'Alene district, Shoshone County, Idaho: U.S. Geol. Survey Prof. Paper 478, 139 p.

The following illustrations and tables are included in this release:

Figure 1. Rock, Ag ($\times 10$)

2. Soil, Ag ($\times 10$)

3. Rock, Sb ($\times 1.0$)

4. Soil, Sb ($\times 1.0$)

5. Rock, Te ($\times 100$)

6. Soil, Te ($\times 100$)

7. Rock, Cd ($\times 10$)

8. Soil, Cd ($\times 10$)

9. Rock, Cu ($\times 0.1$)

Figure 10. Soil, Cu ($\times 0.1$)

11. Rock, Zn ($\times 0.01$)

12. Soil, Zn ($\times 0.01$)

13. Rock, As ($\times 0.1$)

14. Soil, As ($\times 0.1$)

15. Map showing soil sample
localities.

16. Map showing rock sample
localities.

17. Geologic map of the Coeur
d'Alene district, Shoshone
County, Idaho.

Table 1.--Descriptive parameters for cumulative frequency distributions
of the concentrations of nine elements.

2.--Linear correlation coefficients among logarithms of the
concentrations of Hg, Cu, Pb, Zn, Ag, As, Sb, Te, and
Cd in soils.

- - - - -

EXPLANATION

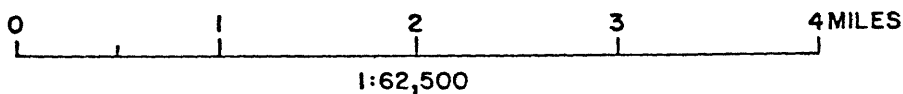
SILVER IN ROCKS

2
Average trace content of metal for all
samples within a 1,000-foot block,
in parts per million times 10. Left
digit of number at block center

3L
Average for block is less than value
stated

_____.5_____
_____.1_____
_____.10_____

Contours defining areas where samples
contain more than 0.5, 1, or 10 parts
per million trace content of metals.
Dashed where inferred



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G. B. GOTT AND OTHERS:
GEOCHEMICAL ABUNDANCE
9 METALS, COEUR D'ALENE
DISTRICT, IDAHO
FIGURE 2

EXPLANATION

SILVER IN SOILS

2

Average trace content of metal for all
samples within a 1,000-foot block,
in parts per million times 10. Left
digit of number at block center

3L

Average for block is less than value
stated

_____.9_____
_____.2_____
_____.3_____

Contours defining areas where samples
contain more than 0.9, 2, or 3 parts
per million trace content of metals.
Dashed where inferred

0 1 2 3 4 MILES

1:62,500

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EXPLANATION

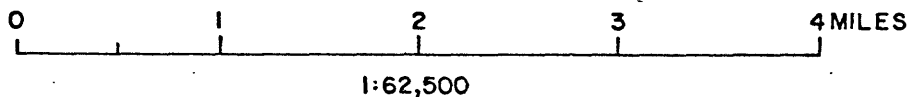
ANTIMONY IN ROCKS

²
Average trace content of metal for all
samples within a 1,000-foot block,
in parts per million times 1.0. Left
digit of number at block center

IL
Average for block is less than value
stated

——— 5 ———
——— 10 ———
——— 50 ———

Contours defining areas where samples
contain more than 5, 10, or 50 parts
per million trace content of metals.
Dashed where inferred



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DISTRICT, IDAHO
FIGURE 4

EXPLANATION

ANTIMONY IN SOILS

2

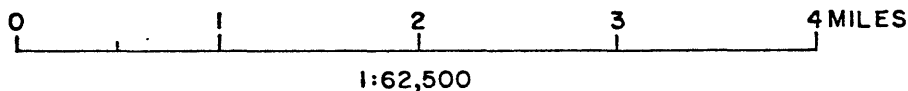
Average trace content of metal for all
samples within a 1,000-foot block,
in parts per million times 1.0. Left
digit of number at block center

11

Average for block is less than value
stated

_____ 5 _____
_____ 10 _____
_____ 50 _____

Contours defining areas where samples
contain more than 5, 10, or 50 parts
per million trace content of metals.
Dashed where inferred



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DISTRICT, IDAHO
FIGURE 5

EXPLANATION

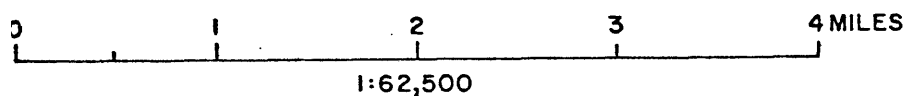
TELLURIUM IN ROCKS

2
Average trace content of metal for all
samples within a 1,000-foot block,
in parts per million times 100. Left
digit of number at block center

10L
Average for block is less than value
stated

_____.1_____
_____.2_____
_____.3_____

Contours defining areas where samples
contain more than 0.1, 0.2, or 0.3
part per million trace content of
metals. Dashed where inferred.
Interval is 0.1 part per million



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DISTRICT, IDAHO
FIGURE 6

EXPLANATION

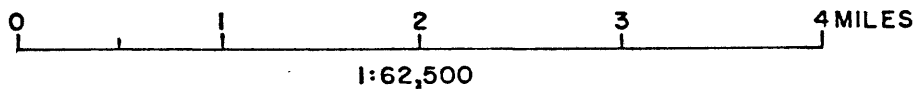
TELLURIUM IN SOILS

²
Average trace content of metal for all
samples within a 1,000-foot block,
in parts per million times 100. Left
digit of number at block center

10L
Average for block is less than value
stated

_____.1_____
_____.2_____
_____.3_____

Contours defining areas where samples
contain more than 0.1, 0.2, or 0.3
part per million trace content of
metals. Dashed where inferred.
Interval is 0.1 part per million



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DISTRICT, IDAHO
FIGURE 7

EXPLANATION

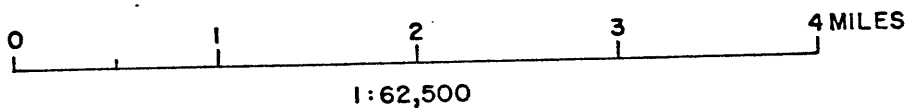
CADMIUM IN ROCKS

²
Average trace content of metal for all
samples within a 1,000-foot block,
in parts per million times 10. Left
digit of number at block center

^{3L}
Average for block is less than value
stated

____ 1 ____
____ 2 ____
____ 3 ____

Contours defining areas where samples
contain more than 1, 2, or 3 parts
per million trace content of metals.
Dashed where inferred. Interval is
1 part per million



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DISTRICT, IDAHO
FIGURE 8

EXPLANATION

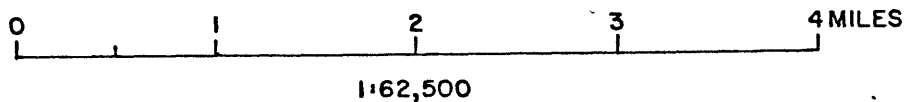
CADMIUM IN SOILS

2
Average trace content of metal for all
samples within a 1,000-foot block, in
parts per million times 10. Left
digit of number at block center

2L
Average for block is less than value
stated

____ 1 ____
____ 2 ____
____ 5 ____

Contours defining areas where samples
contain more than 1, 2, or 5 parts
per million trace content of metals.
Dashed where inferred



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DISTRICT, IDAHO
FIGURE 9

EXPLANATION

COPPER IN ROCKS

2

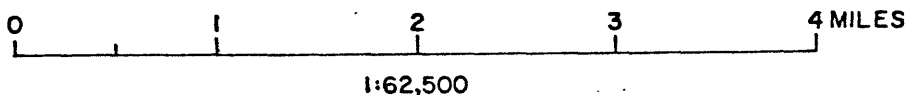
Average trace content of metal for all samples within a 1,000-foot block, in parts per million times 0.1. Left digit of number at block center

31

Average for block is less than value stated

——— 40 ———
——— 70 ———
——— 100 ———

Contours defining areas where samples contain more than 40, 70, or 100 parts per million trace content of metals. Dashed where inferred



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OF 9 METALS, COEUR D'ALENE
DISTRICT, IDAHO
FIGURE //

EXPLANATION

ZINC IN ROCKS

2

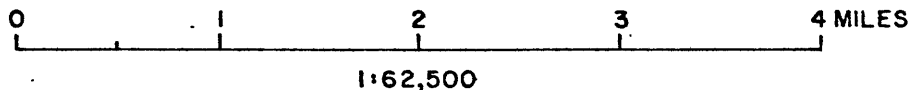
Average trace content of metal for all samples within a 1,000-foot block, in parts per million times 0.01. Left digit of number at block center

1L

Average for block is less than value stated

————— 200 —————
————— 400 —————
————— 600 —————

Contours defining areas where samples contain more than 200, 400, or 600 parts per million trace content of metals. Dashed where inferred. Interval is 200 parts per million



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9 METALS, COEUR D'ALENE
DISTRICT, IDAHO
FIGURE 12

EXPLANATION

ZINC IN SOILS

2

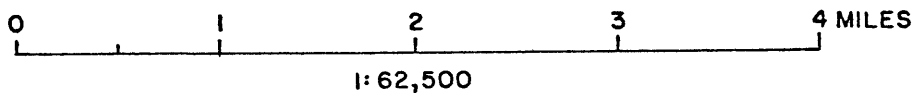
Average trace content of metal for all
samples within a 1,000-foot block,
in parts per million times 0.01. Left
digit of number at block center

L

Average for block is less than value
stated

—————200—————
—————400—————
—————600—————

Contours defining areas where samples
contain more than 200, 400, or 600
parts per million trace content of
metals. Dashed where inferred.
Interval is 200 parts per million



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EXPLANATION

ARSENIC IN ROCKS

2

Average trace content of metal for all
samples within a 1,000-foot block,
in parts per million times 0.1. Left
digit of number at block center

1L

Average for block is less than value
stated

—————20—————
—————50—————
—————100—————

Contours defining areas where samples
contain more than 20, 50, or 100 parts
per million trace content of metals.
Dashed where inferred

0 1 2 3 4 MILES

1:62,500

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EXPLANATION

ARSENIC IN SOIL

2

Average trace content of metal for all
samples within a 1,000-foot block,
in parts per million times 0.1. Left
digit of number at block center

1L

Average for block is less than value
stated

———20———
———50———
———100———

Contours defining areas where samples
contain more than 20, 50, or 100 parts
per million trace content of metals.
Dashed where inferred

0 1 2 3 MILES

1:62,500

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OPEN PIT
 C. L. C.
 OF THE
 DISTRICT, DASH
 FIGURE 18

EXPLANATION

$\frac{\text{Zn}}{\text{Cd}}$ RATIO IN SOILS

170

Average $\frac{\text{Zn}}{\text{Cd}}$ ratio for all samples within
 a 1,000-foot block. Left digit of number
 at block center

— 50 —
 — 100 —
 — 200 —
 — 300 —

Contours defining areas where the $\frac{\text{Zn}}{\text{Cd}}$
 ratio is 50, 100, 200, or 300 or
 greater. Dashed where inferred

0 1 2 3 4 MILES

1:62,500

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